SCH4CR REVIEW OF PERIODIC TABLE AND INTRO TO BONDING WS-6

1. An element key on the periodic table may resemble something like what is shown in the margin. Based on the information shown, indicate what represents the following:

Oxygen
8
O
16.000

   a. *Atomic number*
   b. *Average atomic mass*
   c. *Atomic symbol*
   d. *Element Name*

2. Match the terms in Column II with the descriptions given in Column I.

	Column I	Column II
_____	i. Usually gases or brittle solids at room temperature; poor conductors of heat/electricity	a. Noble gases
_____	ii. Elements that have similar physical and chemical properties	b. Metalloid
_____	iii. Have properties of both metals and non-metals	c. Group
_____	iv. Row of elements in the periodic table	d. Metal
_____	v. Section on the periodic table composed of groups 3-12	e. Non-metal
_____	vi. Number of protons in the nucleus of an atom	f. Transition metals
_____	vii. Element that has luster, is a good conductor of heat/electricity, malleable, solid at room temp.	g. Atomic number
_____	viii. Group of elements that form cations with a +1 charge	h. Period
_____	ix. Group of non-reactive elements	i. Alkali metals

3. Give an example of a third period metalloid _____
4. Which halogen has the largest average atomic mass? _____
5. Name of group 16 element that is a gas at room temperature _____
6. Which lanthanide has the fewest protons? _____
7. Which actinide is used in our nuclear reactors? _____
8. Which transition metal is a liquid at room temperature? _____
9. Which metalloid has 7 valence electrons? _____
10. Element 119 is yet to be discovered. It will be named Gregorium and will have the symbol Gg!! What are some of Gg's physical and chemical properties?

11. Draw the Bohr atom for elements with atomic numbers 9, 11, 18, and 20. In doing so, make use of the element's period and group number.

12. a. What is a cation? What has to happen to the atom in order for a cation to be created?
    b. What is meant by the term *ionization energy?*
    c. What is the trend in ionization energy as you move from left to right along a period?
    d. Metals will readily lose electrons whereas non-metals will not. How does *ionization energy* support this fact?
    e. How does the Bohr model of the atom support the pattern for increasing ionization energy as you move from left to right along a period?
    d. What is the trend in ionization energy as you move down the *alkali metals*?
    e. How might this explain the fact that francium is much more reactive than sodium?
    f. Does Bohr's model of the atom support the pattern seen as you move down group I?

13. a. What is electron affinity?
    b. Which general class of elements have a greater affinity for electrons?
    c. What type of ion, cation or anion, are these elements most likely to form?
    d. In terms of the Bohr atom, why would Fluorine have a greater affinity for electrons than say Iodine?
    e. Why would Fluorine be more reactive than Iodine?

14. Give an example of an element which would form an ion with a +1 charge? +2? +3? -3? -2? -1 charge?

Elements in group 18 are _____. Bohr atoms for these elements show that they have ____ ___ _____. *(Helium, which only has 2 valence electrons, has been placed in this group because it too is non-reactive).*

Chemists believe that it is the special arrangement of electrons in group 18 that gives the atom its _____ _____. This arrangement is often referred to as the _____.

With the information provided by ionization energy and electron affinity, as well as the way in which atoms combine in chemical reactions, chemists believe that it is the _____ that play a key role in chemical reactions.

It is believed that, in reacting, the atoms are trying to obtain a stable octet (or at least the same electron arrangement as its nearest noble gas).

In order to simplify visualizing what is happening, instead of drawing Bohr atoms we draw Lewis dot symbols. *Lewis dot symbols concentrate solely on the valence electrons. Complete the chart below.*

1	2	13	14	15	16	17	18
H·							•He•
Li·							·· :Ne: ··
		· ·Al·					

Remember that metals, in attaining the 'stable octet' have a tendency to _____.

Non-metals, in attaining the 'stable octet' have a tendency to _____.